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**File Code:** 3420 **Date:** November 13, 2002
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**Subject:** Proposed Bark Beetle Management Activities in the Paliza Family, San Antonio, Redondo, and Jemez Falls Campgrounds on the Jemez RD, Santa Fe NF

**To:** Forest Supervisor, Santa Fe National Forest

On November 7, 2002, Joan Hellen, Santa Fe NF Landscape Architect, and I visited campgrounds on the Jemez RD to characterize stand conditions and discuss strategies for minimizing ponderosa pine mortality from bark beetles. This was a follow-up to the visit to the Paliza Group Campground by Terry Rogers of our staff on October 1. At that time, Terry examined several trees that had been killed by *Dendroctonus brevicomis* (western pine beetle) and *Ips pini* (pine engraver) within the recreation site. His report was sent in letter format to the Jemez District Ranger on October 11, 2002.

Joan and I started with a drive through the Paliza Group site, and she indicated additional trees had faded in the month since Terry's visit. The purpose of my visit was to examine four additional campgrounds and offer advice on management action that might be taken to prevent the types of losses occurring in the Paliza Group Campground. Below are the results of my evaluation:

**Paliza Family Campground**

While no beetles are presently active within this site, I would describe it as being at high risk for attack. The currently infested Paliza Group Campground is nearby, and a few trees on the perimeter of the Paliza Family Campground have already been attacked. To our advantage, both the Group and Family sites are being redesigned, so tree losses can be addressed in the new site configuration. The Paliza Family Campground, at an elevation of about 6800 ft., has many large-diameter "yellow-belly" ponderosa pines that lend considerable character to the site. Joan would like to retain some of theses "specimen" trees in her new design. Basal area and dbh were measured in two representative areas within the campground.

There is great variety in tree age and diameter within the stands examined (Table 1). Reducing the basal area by 50% would result in densities that provide the best chance for vigor-enhanced beetle-resistance. For the very large specimen trees, the option of preventive spraying of the bole and large branches to a minimum diameter of three inches would provide the greatest degree of protection. Due to the size of the trees involved, professional application using a lift or cherry picker would be required for treatment efficacy. Applying the insecticide this way also ensures the material is deposited efficiently to the bark surface, minimizing drift and non-target effects. Carbaryl at a concentration of 2% active ingredient is the most widely used insecticide for this purpose. One application generally protects for a full year. Thinning to enhance residual tree vigor, combined with protective treatment of the most valuable uninfested specimen trees, would meet the management objectives for this site.

**San Antonio Campground**
Further north, at an elevation of about 7600 ft, this recreation area is higher and receives more precipitation than the Paliza sites, yet is solidly in ponderosa pine type. The Forest has proposed a light thinning here. Because no bark beetle activity is yet present in this area, it is an excellent time to take proactive steps to improve stand vigor by reducing competition. As noted in the table below, basal area was measured at 130 and 190 in two plots sited where thinning would most likely take place. There are some very large trees interspersed with saplings and poles in this campground. A clumped distribution is natural in this type, so achieving a uniform basal area is not necessary. Slash disposal is essential to prevent attracting ips beetles to the site. The strategy is to maximize the vigor of the residual stand, thereby enhancing bark beetle resistance. Depending on site index, I prefer to see a basal area of 40-80 to minimize bark beetle susceptibility. This site, because of its adjacency to the San Antonio River, could probably support the higher basal area.

**Redondo Campground**
Redondo Campground, at an elevation of about 8,000 ft. is in a stand of old-growth yellow-belly ponderosa with a very heavy population of saplings and poles interspersed. Again, no bark beetle activity is present. The Forest is proposing thinning to enhance vigor, with a secondary benefit of reducing fuel load and ladders. I am attaching a July 1999 hazard tree evaluation by our office for this site, so that identified hazard trees not yet removed can be addressed during the thinning operation. We know that white pocket rot is present in the stems of some of the larger trees, as evidenced by the stem failure of two trees documented in 1998. This site is also on pumice soils, which require consideration with regard to the intensity of thinning and potential for windthrow. Basal area was measured at 190 and 230, with much of the excess stocking in the size classes below 9 inches (Table 1). I would recommend leaving trees in a variety of age/size classes to serve as next generation recruits.

**Jemez Falls Campground**
This campground is just up the road from Redondo and shares some characteristics, such as large old-growth specimen trees and pumice soils. However, one additional challenge Jemez Falls presents is the presence of root rot throughout the site. This condition was diagnosed many years ago by our staff pathologists when the site was proposed for development. Despite the long-term drawbacks of investing in such a site, there seemed to be no alternative, due to rugged landform in the area. While the creation of large stumps can make this problem worse by providing a food base for the fungus, the limited amount of thinning proposed by the Forest should not be a serious problem. According to our staff pathologist, Dave Conklin, smaller-diameter stumps break down relatively quickly, limiting the potential for disease spread over time. Basal area in this campground ranged from 80 to 240; however, high sapling densities were not captured in those measurements. While some may say such thickets provide “screening” between campsites, this condition is neither healthy nor sustainable, and also presents a fire ladder hazard. Broad-leaved species such as gamble oak, mountain mahogany, or manzanita would more effectively and sustainably serve the screening function. By opening the canopy, thinning may have the secondary benefit of providing the light needed to stimulate shrub species.

**Data and Photos**

Table 1. Summary of diameter distribution of trees in proposed treatment areas, Jemez RD, Santa Fe NF, NM.

| Site | BA (2 plots per site) | Number of trees by DBH Class (inches) in 10-factor BA plots | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | <6.0 | 6.0-8.9 | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-28.9 | 29.0-38.9 | 39.0 & up |
| Paliza Family CG | 180 | - | 2 | 2 | 4 | 1 | 3 | 4 | 2 | - | - |
| | 160 | 5 | 5 | 1 | 1 | 1 | 1 | - | 1 | - | - |
| San Antonio CG | 130 | 1 | 3 | - | 1 | - | - | - | 7 | - | - |
| | 190 | - | 3 | 2 | 7 | 3 | 1 | 1 | 1 | - | 1 |
| Redondo CG | 190 | 5 | 3 | 3 | 1 | 2 | 2 | 1 | - | 2 | - |
| | 230 | 4 | 9 | 7 | 1 | 1 | - | - | - | 1 | - |
| Jemez Falls CG | 80 | - | 2 | 1 | - | 1 | - | - | 4 | - | - |
| | 240 | - | - | 1 | 4 | 2 | 2 | 2 | 13 | - | - |

Joan Hellen measuring the dbh of an aesthetically valuable specimen tree in Paliza Family campground. Note background tree density.

This dog-hair thicket of seedlings and saplings adjacent to large diameter ponderosa pine in the Jemez Falls campground is a condition also common to the other sites visited.

**Conclusion**

I support the Forest's proposal to treat a very limited number of uninfested high-value trees (a preliminary estimate is less than 40) in the Paliza Family and Group Campgrounds with a protective insecticidal spray. This application is very narrowly targeted to the bark surface of the bole and large branches so should have minimal non-target impacts. Application of carbaryl (the Sevin ® SL formulation is labeled for bark beetles) is prohibited over open water, and local conditions will dictate how much of a buffer is required to prevent drift from reaching open water. A certified pesticide applicator must be involved in the planning and oversight of such a treatment, and the label must be strictly followed. Spraying can be done any time between now and the end of March.

I also support the vigor-enhancing thinning proposed for all five campgrounds. As insect epidemics develop, we are often left wringing our hands that nothing was done sooner to prevent the losses. This Forest is advancing a proactive plan to put the stands in question in their best possible condition should reduced precipitation be the trend for the next several years. Disposal of generated slash is essential to protecting the residual trees from *Ips* beetle attack. Removal from the site of all material down to a three-inch diameter is best. The optimal window for cutting operations is fall through the end of December, as this allows ample time for slash to dry and become unsuitable prior to spring beetle flights. The use of heavy-duty plastic sheeting to wrap infested material should be an absolute last resort. Even a bird landing on the plastic and tearing a small opening can undermine the effort; thus, the use of plastic must be monitored closely to be an effective treatment.

Please convey my thanks to Joan Hellen for her field assistance.

Should you have any questions regarding this evaluation, feel free to contact me at (505) 842-3286, or via e-mail at dallenreid@fs.fed.us.

/s/ Debra Allen-Reid
DEBRA ALLEN-REID
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Enclosure: July 7, 1999 Hazard Tree Survey, Redondo Campground

cc: John F Peterson, Joan Hellen, Thomas Malecek, Leonard Lucero, Douglas L Parker, Terry J Rogers, David A Conklin, John Anhold, John Beckley